AMENDMENTS TO THE CLAIMS

1. (currently amended) A failure diagnostic system for an exhaust pressure increasing device, comprising:

an intake channel and an exhaust channel in communication with a cylinder of an internal combustion engine;

an exhaust pressure increasing device that increases an exhaust system pressure of said exhaust channel;

an intake system pressure detecting device provided in said intake channel, for detecting an intake system pressure;

an intake valve that selectively allows and prohibits communication between the intake channel and the cylinder; and

an exhaust pressure increase failure diagnostic unit that determines ~~means for determining~~ as to whether the exhaust pressure increasing device has failed based on a maximum ~~according to the detected~~ intake pressure generated due to a spit-back of a combustion gas in the cylinder towards the intake channel after ~~obtained at a time within a predetermined period of time since~~ the intake valve has allowed the intake channel to communicate with the cylinder and prior to an occurrence of an exhaust pulsation or an intake pulsation, and a predetermined failure diagnosis reference range.

2. (canceled)

3. (currently amended) A failure diagnostic system according to claim 1~~2~~, further comprising:

a failure notifying device that notifies a failure~~, the failure notifying device notifying a failure~~ when said exhaust pressure increase failure diagnostic section determines that the exhaust pressure increasing device has failed.

4. (previously presented) A failure diagnostic system for an exhaust pressure increasing device, comprising:

an intake channel and an exhaust channel in communication with cylinders of an internal combustion engine;

an exhaust pressure increasing device that increases an exhaust system pressure of said exhaust channel;

an intake system pressure detecting device provided in said intake channel, for detecting an intake system pressure; and

an exhaust pressure increase failure diagnostic section that determines as to whether the exhaust pressure increasing device has failed according to intake system pressure information obtained by said intake system pressure detecting device and a predetermined failure diagnosis reference range;

an intake valve and an exhaust valve that open and close an intake opening and an exhaust opening, respectively, of a combustion chamber in the cylinders; and

a valve timing changing device that changes at least one of valve closing timing of said exhaust valve and valve opening timing of said intake valve,

wherein said exhaust pressure increase failure diagnostic section determines as to whether the exhaust pressure increasing device has failed when an amount of overlap of the valve closing timing of said exhaust valve and the valve opening timing of said intake valve is equal to or greater than a predetermined amount.

5. (original) A failure diagnostic system according to claim 4, wherein said exhaust pressure increase failure diagnostic section determines as to whether the exhaust pressure increasing device has failed according to the intake system pressure information obtained when the amount of overlap is equal to a reference amount of overlap.

6. (original) A failure diagnostic system according to claim 4, wherein:

the exhaust pressure increase failure diagnostic section comprises a subject converting section that carries out conversion of a subject of comparison in making the determination as to whether the exhaust pressure increasing device has failed; and

said subject converting section carries out conversion of the subject of comparison by correcting the intake system pressure information to a low voltage side or the predetermined failure diagnosis reference range to a high reference side when the amount of overlap is great, and correcting the intake system pressure information to a high voltage side or the predetermined failure diagnosis reference range to a low reference side when the amount of overlap is small.

7. (original) A failure diagnostic system according to claim 4, wherein:

the exhaust pressure increase failure diagnostic section comprises a subject converting section that carries out conversion of a subject of comparison in making the determination as to whether the exhaust pressure increasing device has failed; and

said subject converting section carries out conversion of the subject of comparison by correcting the intake system pressure information to a low voltage side or correcting the predetermined failure diagnosis reference range to a high reference side when a valve opening speed of said intake valve, a load applied to the internal combustion engine, or a flow rate of exhaust in said exhaust channel is high, and correcting the intake system pressure information to a high voltage side or correcting the predetermined failure diagnosis reference range to a low reference side when the valve opening speed, the load, or the flow rate is low.

8. (previously presented) A vehicle including an internal combustion engine, comprising:

an intake channel and an exhaust channel in communication with cylinders of an internal combustion engine;

an intake valve and an exhaust valve that open and close an intake opening and an exhaust opening, respectively, of a combustion chamber in the cylinders;

a valve timing changing device that changes at least one of valve closing timing of said exhaust valve and valve opening timing of said intake valve;

an exhaust pressure increasing device that increases an exhaust system pressure of said exhaust channel;

an intake system pressure detecting device provided in said intake channel, for detecting an intake system pressure; and

an exhaust pressure increase failure diagnostic section that determines as to whether the exhaust pressure increasing device has failed according to intake system pressure information obtained by said intake system pressure detecting device and a predetermined failure diagnosis reference range when an amount of overlap of the valve closing timing of said exhaust valve and the valve opening timing of said intake valve is equal to or greater than a predetermined amount.

9. (canceled)

10. (currently amended) A method for detecting failure in an exhaust pressure increasing device for increasing an exhaust system pressure provided in an exhaust channel of an internal combustion engine, the method comprising:

detecting a pressure inside an intake channel of the internal combustion engine; and

determining as to whether the exhaust pressure increasing device has failed based on a maximum detected intake pressure generated due to a spit-back of a combustion gas in a cylinder towards the intake channel after an intake valve has allowed the intake channel to communicate with a cylinder of the internal combustion engine, and a predetermined failure diagnosis reference range.

11. (canceled)

12. (previously presented) The method according to claim 10, further comprising:

notifying a failure when said determining step determines that the exhaust pressure increasing device has failed.

13. (new) A failure diagnostic system according to claim 1, wherein the predetermined failure diagnosis reference range is set based on a parameter including an extent that the exhaust pressure increasing device is throttling the exhaust channel, an amount of overlap between the intake valve and an exhaust valve, an engine speed, an intake air quantity, and an atmospheric pressure.

14. (new) A failure diagnostic system for an exhaust pressure increasing device, comprising:

an intake channel and an exhaust channel in communication with a cylinder of an internal combustion engine;

an exhaust pressure increasing device that increases an exhaust system pressure of said exhaust channel;

an intake system pressure detecting device provided in said intake channel, for detecting an intake system pressure;

an intake valve that selectively allows and prohibits communication between the intake channel and the cylinder; and

an exhaust pressure increase failure diagnostic unit that determines as to whether the exhaust pressure increasing device has failed based on a minimum intake pressure detected after the intake valve has allowed the intake channel to communicate with the cylinder and prior to an occurrence of an exhaust pulsation or an intake pulsation, and a predetermined failure diagnosis reference range.

15. (new) A failure diagnostic system according to claim 14, wherein the exhaust pressure increase failure diagnostic unit further determines a maximum intake pressure generated due to a spit-back of a combustion gas in the cylinder towards the intake channel after the intake valve has allowed the intake channel to communicate with the cylinder and prior to the occurrence of the exhaust pulsation or the intake pulsation, and determines as to whether the exhaust pressure increasing device has failed based on a difference between the minimum intake pressure and the maximum intake pressure, and the predetermined failure diagnosis reference range.

16. (new) A failure diagnostic system according to claim 15, wherein the difference is corrected based on an overlap between the intake valve and an exhaust valve.

17. (new) A failure diagnostic system according to claim 15, wherein the difference is corrected based on a correction coefficient.